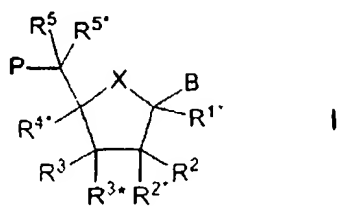


ALLOWED CLAIMS/ TJ

141. (Amended) An oligomer comprising at least one LNA nucleoside of the general formula I



wherein X is selected from -O-;

B is selected from hydrogen, hydroxy, optionally substituted C₁₋₄-alkoxy, optionally substituted C₁₋₄-alkyl, optionally substituted C₁₋₄-acyloxy, nucleobases, DNA intercalators, photochemically active groups, thermochemically active groups, chelating groups, reporter groups, and ligands;

P designates the radical position for an internucleoside linkage to a succeeding monomer, or a 5'-terminal group, such internucleoside linkage or 5'-terminal group optionally including the substituent R⁵;

one of the substituents R², R^{2*}, R³, and R^{3*} is a group P* which designates an internucleoside linkage to a preceding monomer, or a 3'-terminal group;

one pair of non-geminal substituents R^{4*}, and R^{2*}, designating a biradical consisting of 2-5 groups/atoms selected from -(CR*R*)_r-Y-(CR*R*)_s-, -(CR*R*)_r-Y-(CR*R*)_s-Y-, -Y-(CR*R*)_r+s-Y-, -Y-(CR*R*)_r-Y-(CR*R*)_s-, -(CR*R*)_r+s-, each R* is independently selected from hydrogen, halogen, hydroxy, mercapto, amino, optionally substituted C₁₋₆-alkoxy, optionally substituted C₁₋₆-alkyl, DNA intercalators, photochemically active groups, thermochemically active groups, chelating groups, reporter groups, and ligands, Y is -O-, -S-, 0 (zero) or -N(RN)-, and each of r and s is 0-4 with the proviso that the sum r+s is 1-4, and provided that when the biradical is -(CR*R*)_r-Y-(CR*R*)_s-, then Y is -S- or -N(R^N)-; and each of the substituents R^{1*}, R², R³, R⁵, and R^{5*}, which are present and not involved in P, P* is independently selected from hydrogen, optionally substituted C₁₋₁₂-alkyl, optionally substituted C₂₋₁₂-alkenyl, optionally substituted C₂₋₁₂-alkynyl, hydroxy, C₁₋₁₂-alkoxy, C₂₋₁₂-alkenyloxy, carboxy, C₁₋₁₂-alkoxycarbonyl, C₁₋₁₂-alkylcarbonyl, formyl, aryl, aryloxy-carbonyl, aryloxy,

arylcarbonyl, heteroaryl, heteroaryloxy-carbonyl, heteroaryloxy, heteroarylcarbonyl, amino, mono- and di(C₁₋₆-alkyl)amino, carbamoyl, mono- and di(C₁₋₆-alkyl)-amino-carbonyl, amino-C₁₋₆-alkyl-aminocarbonyl, mono- and di(C₁₋₆-alkyl)amino-C₁₋₆-alkyl-aminocarbonyl, C₁₋₆-alkyl-carbonylamino, carbamido, C₁₋₆-alkanoyloxy, sulphonyl, C₁₋₆-alkylsulphonyloxy, nitro, azido, sulphonyl, C₁₋₆-alkylthio, halogen, DNA intercalators, photochemically active groups, thermochemically active groups, chelating groups, reporter groups, and ligands, where aryl and heteroaryl may be optionally substituted;

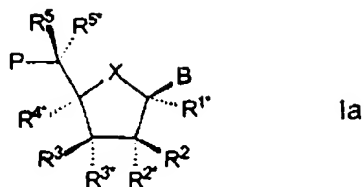
and basic salts and acid addition salts thereof.

~~144.~~ (amended) An oligomer of claim ~~141~~ wherein the oligomer comprises 1 to 10000 nucleosides of the formula I and 0-10000 nucleosides selected from naturally occurring nucleosides and nucleoside analogues, with the proviso that the sum of the number of nucleosides and the number of LNA(s) is at least 2.

~~145.~~ (amended) An oligomer of claim ~~144~~ wherein at least one LNA nucleoside comprises a nucleobase as the substituent B.

~~146.~~ (amended) An oligomer of claim ~~141~~ wherein one of the substituents R³ and R^{3'} designates P^{*}.

~~147.~~ (amended) An oligomer of ~~141~~ wherein one or more nucleosides have the following formula Ia



wherein P, P^{*}, B, X, R^{1*}, R², R^{2*}, R³, R^{4*}, R⁵, and R^{5*} are as defined in claim 141.

~~148.~~ (amended) An oligomer of claim ~~147~~ wherein R^{3*} designates P^{*}.

~~149.~~ (amended) An oligomer of claim ~~148~~ wherein the oligomer comprises one biradical constituted by two non-geminal substituents.

154. (Amended) An oligomer of claim 141 wherein R^{3*} designates P^{*}.

156. An oligomer of claim 154 wherein, R² is selected from hydrogen, hydroxy, and optionally substituted C₁₋₆-alkoxy, and R^{1*}, R³, R⁵, and R^{5*} designate hydrogen.

159. An oligomer of claim 156 wherein B is selected from nucleobases.

160. An oligomer of claim 159 wherein the oligomer comprises at least one LNA nucleoside wherein B is selected from adenine, guanine, thymine, cytosine, uracil, purine, xanthine, diaminopurine, 8-oxo-N⁶-methyladenine, 7-deazaxanthine, 7-deazaguanine, N⁴,N⁶-ethanocytosine, N⁶,N⁶-ethano-2,6-diaminopurine, 5-methylcytosine, 5-(C³-C⁶)-alkynylcytosine, 2,6-diaminopyrimidine, 2,6-diaminopyrazine, 1-methyl-pyrazolo[4,3-d]pyrimidine-5,7(4H,6H)-dione, 1-methyl-pyrazolo[4,3-d]pyrimidine-5,7(4H,6H)-dione, 5-fluorouracil, 5-bromouracil, pseudoisocytosine, 2-hydroxy-5-methyl-4-triazolopyridin, isocytosine, isoguanin, and inosine.

~~173~~. (amended) An oligomer according to claim ~~141~~ wherein any internucleoside linkage of the one or more LNA nucleosides is selected from linkages consisting of 2 to 4 groups/atoms selected from $-\text{CH}_2-$, $-\text{O}-$, $-\text{S}-$, $-\text{NR}^{\text{H}}-$, $>\text{C}=\text{O}$, $>\text{C}=\text{NR}^{\text{H}}$, $>\text{C}=\text{S}$, $-\text{Si}(\text{R}'')_2-$, $-\text{SO}-$, $-\text{S}(\text{O})_2-$, $-\text{P}(\text{O})_2-$, $-\text{P}(\text{O},\text{S})-$, $-\text{P}(\text{S})_2-$, $-\text{PO}(\text{R}'')$, $-\text{PO}(\text{OCH}_3)-$, and $-\text{PO}(\text{NHR}^{\text{H}})-$, where R^{H} is selected from hydrogen and C_{1-4} -alkyl, and R'' is selected from C_{1-6} -alkyl and phenyl.

~~174~~. (amended) An oligomer of claim ~~173~~ wherein any internucleoside linkage of the one or more LNA nucleosides is selected from $-\text{CH}_2-\text{CH}_2-\text{CH}_2-$, $-\text{CH}_2-\text{CO}-\text{CH}_2-$, $-\text{CH}_2-\text{CHOH}-\text{CH}_2-$, $-\text{O}-\text{CH}_2-\text{O}-$, $-\text{O}-\text{CH}_2-\text{CH}_2-$, $-\text{O}-\text{CH}_2-\text{CH}=\text{CH}_2-$, $-\text{CH}_2-\text{CH}_2-\text{O}-$, $-\text{NR}^{\text{H}}-\text{CH}_2-\text{CH}_2-$, $-\text{CH}_2-\text{CH}_2-\text{NR}^{\text{H}}-$, $-\text{CH}_2-\text{NR}^{\text{H}}-\text{CH}_2-$, $-\text{O}-\text{CH}_2-\text{CH}_2-\text{NR}^{\text{H}}-$, $-\text{NR}^{\text{H}}-\text{CO}-\text{O}-$, $-\text{NR}^{\text{H}}-\text{CO}-\text{NR}^{\text{H}}-$, $-\text{NR}^{\text{H}}-\text{CS}-\text{NR}^{\text{H}}-$, $-\text{NR}^{\text{H}}-\text{C}(=\text{NR}^{\text{H}})-\text{NR}^{\text{H}}-$, $-\text{NR}^{\text{H}}-\text{CO}-\text{CH}_2-\text{NR}^{\text{H}}-$, $-\text{O}-\text{CO}-\text{O}-$, $-\text{O}-\text{CO}-\text{CH}_2-\text{O}-$, $-\text{O}-\text{CH}_2-\text{CO}-\text{O}-$, $-\text{CH}_2-\text{CO}-\text{NR}^{\text{H}}-$, $-\text{O}-\text{CO}-\text{NR}^{\text{H}}-$, $-\text{NR}^{\text{H}}-\text{CO}-\text{CH}_2-$, $-\text{O}-\text{CH}_2-\text{CO}-\text{NR}^{\text{H}}-$, $-\text{O}-\text{CH}_2-\text{CH}_2-\text{NR}^{\text{H}}-$, $-\text{CH}=\text{N}-\text{O}-$, $-\text{CH}_2-\text{NR}^{\text{H}}-\text{O}-$, $-\text{CH}_2-\text{O}-\text{N}=\text{CH}_2-$, $-\text{CH}_2-\text{O}-\text{NR}^{\text{H}}-$, $-\text{CO}-\text{NR}^{\text{H}}-\text{CH}_2-$, $-\text{CH}_2-\text{NR}^{\text{H}}-\text{O}-$, $-\text{CH}_2-\text{NR}^{\text{H}}-\text{CO}-$, $-\text{O}-\text{NR}^{\text{H}}-\text{CH}_2-$, $-\text{O}-\text{NR}^{\text{H}}-$, $-\text{O}-\text{CH}_2-\text{S}-$, $-\text{S}-\text{CH}_2-\text{O}-$, $-\text{CH}_2-\text{CH}_2-\text{S}-$, $-\text{O}-\text{CH}_2-\text{CH}_2-\text{S}-$, $-\text{S}-\text{CH}_2-\text{CH}=\text{CH}_2-$, $-\text{S}-\text{CH}_2-\text{CH}_2-$, $-\text{S}-\text{CH}_2-\text{CH}_2-\text{O}-$, $-\text{S}-\text{CH}_2-\text{CH}_2-\text{S}-$, $-\text{CH}_2-\text{S}-\text{CH}_2-$, $-\text{CH}_2-\text{SO}-\text{CH}_2-$, $-\text{CH}_2-\text{SO}_2-\text{CH}_2-$, $-\text{O}-\text{SO}-\text{O}-$, $-\text{O}-\text{S}(\text{O})_2-\text{O}-$, $-\text{O}-\text{S}(\text{O})_2-\text{CH}_2-$, $-\text{O}-\text{S}(\text{O})_2-\text{NR}^{\text{H}}-$, $-\text{NR}^{\text{H}}-\text{S}(\text{O})_2-\text{CH}_2-$, $-\text{O}-\text{S}(\text{O})_2-\text{CH}_2-$, $-\text{O}-\text{P}(\text{O})_2-\text{O}-$, $-\text{O}-\text{P}(\text{O},\text{S})-\text{O}-$, $-\text{O}-\text{P}(\text{S})_2-\text{O}-$, $-\text{S}-\text{P}(\text{O})_2-\text{O}-$, $-\text{S}-\text{P}(\text{O},\text{S})-\text{O}-$, $-\text{S}-\text{P}(\text{S})_2-\text{O}-$, $-\text{O}-\text{P}(\text{O})_2-\text{S}-$, $-\text{O}-\text{P}(\text{O},\text{S})-\text{S}-$, $-\text{O}-\text{P}(\text{S})_2-\text{S}-$, $-\text{S}-\text{P}(\text{O})_2-\text{S}-$, $-\text{S}-\text{P}(\text{O},\text{S})-\text{S}-$, $-\text{S}-\text{P}(\text{S})_2-\text{S}-$, $-\text{O}-\text{PO}(\text{R}'')-\text{O}-$, $-\text{O}-\text{PO}(\text{OCH}_3)-\text{O}-$, $-\text{O}-\text{PO}(\text{BH}_3)-\text{O}-$, $-\text{O}-\text{PO}(\text{NHR}^{\text{H}})-\text{O}-$, $-\text{O}-\text{P}(\text{O})_2-\text{NR}^{\text{H}}-$, $-\text{NR}^{\text{H}}-\text{P}(\text{O})_2-\text{O}-$, $-\text{O}-\text{P}(\text{O},\text{NR}^{\text{H}})-\text{O}-$, and $-\text{O}-\text{Si}(\text{R}'')_2-\text{O}-$.

~~175~~. (amended) An oligomer of claim ~~174~~ wherein any internucleoside linkage of the one or more LNA nucleosides is selected from $-\text{CH}_2-\text{CO}-\text{NR}^{\text{H}}-$, $-\text{CH}_2-\text{NR}^{\text{H}}-\text{O}-$, $-\text{S}-\text{CH}_2-\text{O}-$, $-\text{O}-\text{P}(\text{O})_2-\text{O}-$, $-\text{O}-\text{P}(\text{O},\text{S})-\text{O}-$, $-\text{O}-\text{P}(\text{S})_2-\text{O}-$, $-\text{NR}^{\text{H}}-\text{P}(\text{O})_2-\text{O}-$, $-\text{O}-\text{P}(\text{O},\text{NR}^{\text{H}})-\text{O}-$, $-\text{O}-\text{PO}(\text{R}'')-\text{O}-$, $-\text{O}-\text{PO}(\text{CH}_3)-\text{O}-$, and $-\text{O}-\text{PO}(\text{NHR}^{\text{H}})-\text{O}-$, where R^{H} is selected from hydrogen and C_{1-4} -alkyl, and R'' is selected from C_{1-6} -alkyl and phenyl.

176. (Amended) An oligomer of claim 141 wherein each of the substituents R^{1*} , R^2 , R^3 , R^{3*} , R^5 , and R^{5*} , of the one or more LNA nucleosides, which are present and not involved in P, P^* , is independently selected from hydrogen, optionally substituted C_{1-6} -alkyl, optionally substituted C_{2-6} -alkenyl, hydroxy, C_{1-6} -alkoxy, C_{2-6} -alkenyloxy, carboxy, C_{1-6} -alkoxycarbonyl, C_{1-6} -alkylcarbonyl, formyl, amino, mono- and di(C_{1-6} -alkyl)amino, carbamoyl, mono- and di(C_{1-6} -alkyl)-amino-carbonyl, C_{1-6} -alkyl-carbonylamino, carbamido, azido, C_{1-6} -alkanoyloxy, sulphonyl, C_{1-6} -alkylthio, DNA intercalators, photochemically active groups, thermochemically active groups, chelating groups, reporter groups, and ligands, and halogen, where two geminal substituents together may designate oxo, and where R^{N*} , when present and not involved in a biradical, is selected from hydrogen and C_{1-4} -alkyl.

177. (Amended) An oligomer of claim 141 wherein each of the substituents R^{1*} , R^2 , R^3 , R^{3*} , R^5 , and R^{5*} , of the LNA(s), which are present and not involved in P, P^* designate hydrogen.

~~178.~~ (amended) An oligomer of claim ~~141~~ wherein P is a 5'-terminal group selected from hydrogen, hydroxy, optionally substituted C_{1-6} -alkyl, optionally substituted C_{1-6} -alkoxy, optionally substituted C_{1-6} -alkylcarbonyloxy, optionally substituted aryloxy, monophosphate, diphosphate, triphosphate, and -W-A', wherein W is selected from -O-, -S-, and -N(R^H)- where R^H is selected from hydrogen and C_{1-6} -alkyl, and where A' is selected from DNA intercalators, photochemically active groups, thermochemically active groups, chelating groups, reporter groups, and ligands.

~~179.~~ (amended) An oligomer of claim ~~141~~ wherein P^* is a 3'-terminal group selected from hydrogen, hydroxy, optionally substituted C_{1-6} -alkoxy, optionally substituted C_{1-6} -alkylcarbonyloxy, optionally substituted aryloxy, and -W-A', wherein W is selected from -O-, -S-, and -N(R^H)- where R^H is selected from hydrogen and C_{1-6} -alkyl, and where A' is selected from DNA intercalators, photochemically active groups, thermochemically active groups, chelating groups, reporter groups, and ligands.

~~180.~~ (amended) An oligomer of claim ~~141~~ wherein the oligomer corresponds to the following formula V:



wherein

q is 1-50;

each of n(0), ..., n(q) is independently 0-10000;

each of m(1), ..., m(q) is independently 1-10000;

with the proviso that the sum of n(0), ..., n(q) and m(1), ..., m(q) is 2-15000;

G designates a 5'-terminal group;

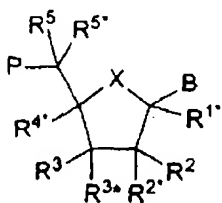
each Nu independently designates a nucleoside selected from naturally occurring nucleosides and nucleoside analogues;

each LNA independently designates a nucleoside analogue;

each L independently designates an internucleoside linkage between two groups selected from

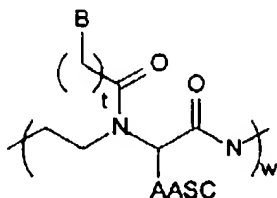
Nu and LNA, or L together with G* designates a 3'-terminal group; and

each LNA-L independently designates a nucleoside analogue of the general formula I:



wherein the substituents B, P, P*, R^{1*}, R², R^{2*}, R³, R^{4*}, R⁵, and R^{5*}, and X are as defined in claim ~~141~~.

~~181~~. (amended) An oligomer of claim ~~141~~ further comprising a PNA mono- or oligomer segment of the formula



wherein B is as defined above for the formula I, AASC designates hydrogen or an amino acid side chain, t is 1-5, and w is 1-50.

~~182~~. (amended) An oligomer of claim ~~141~~ which has an increased specificity towards complementary ssRNA or ssDNA compared to a corresponding reference oligonucleotide which does not contain any LNA units.

~~183~~. (amended) An oligomer of claim ~~141~~ which has an increased affinity towards complementary ssRNA or ssDNA compared to a corresponding reference oligonucleotide which does not contain any LNA units.

~~184~~. (amended) An oligomer of claim ~~141~~ which is capable of binding to a target sequence in a dsDNA or dsRNA molecule by of strand displacement or by triple helix formation.

~~185~~. (amended) An oligomer of claim ~~141~~ which is more resistant to nucleases than a corresponding reference oligonucleotide which does not contain any LNA units.

~~186~~. (amended) An oligomer according to claim ~~141~~ which has nucleic acid catalytic activity.

195. A diagnostic or analysis kit comprising an oligonucleotide of claim 141.

~~196~~. (amended) A kit of claim ~~196~~ wherein the oligonucleotide is immobilized on a solid support.

~~197~~. (amended) A diagnostic or analysis kit comprising a reaction body and one or more oligonucleotides of claim ~~141~~.

~~198~~. (amended) The kit of claim ~~197~~ wherein the one or more oligonucleotides are immobilized on the reaction body.

~~199~~. (amended) A diagnostic or analysis kit comprising a reaction body and one or more oligonucleotides of claim ~~147~~.

~~200~~. (amended) The kit of claim ~~199~~ wherein the one or more oligonucleotides are immobilized on the reaction body.

201. (Amended) A diagnostic or analysis kit comprising a reaction body and one or more oligonucleotides of claim 156.

~~202~~. (amended) The kit of claim ~~201~~ wherein the one or more oligonucleotides are immobilized on the reaction body.